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our native black walnut. It is from these trees that the famous Circassian walnut lumber is obtained. The nut and kernel are practically the same as those of the English walnut of California, and in some cases, are even larger and of more pleasing flavor.

★ Even if they did not bear valuable nuts, they would be highly desirable in lawn and landscape planting for their ornamental value alone. The light colored bark and dark green, glossy, almost tropical looking foliage, give beauty and distinction to any setting.

★ Before the Northern Nut Growers' annual convention at the State Agricultural Experiment Station in Geneva, N. Y. in September, 1936, Mr. Crath gave a detailed account of unusual interest on his observations of the Carpathian walnuts. He also exhibited nuts from the best varieties. Those who wish may read his complete address in the annual report of the Association for that year.

★ Wishing some point south of the Border where his trees could be distributed without the difficulty and delay occasioned in getting small shipments across, Mr. Crath has asked us to take sole charge of their distribution in the United States. They stand shipment and transplanting readily. We have transplanted over sixteen hundred with a loss of less than one percent. They may be set out safely either in the fall or in the spring. The trees we have for sale were all grown for the first two years by Mr. Crath and have been transplanted once. They are all from his best stock. Before transplanting, the tops were cut back about two-thirds and the tap roots pruned to increase the development of side roots. Thus the tops are now only about two feet high but the root systems are large and vigorous and the trees will make rapid growth from now on.

PRICES

Regular—three years old—all from carefully selected parents as previously stated, \$2.00 each.

Special—A limited number same size and age as the regular grade but from especially outstanding parents, \$3.00 each.

Reduction for quantity lots as follows:

5 trees 5%; 10 trees 10%; 25 trees 15%

Shipments made either by express or parcel post.
F.O.B. Ithaca, N. Y.

TERMS—Cash with order, or, if desired, orders will be booked for 10%—balance to be paid before the trees are shipped. Planting instructions accompany each shipment.

SAMUEL H. GRAHAM,
Bostwick Road, Ithaca, N. Y.

Member Northern Nut Growers' Association.

Member Pennsylvania Nut Growers' Association.

"Plant thou a tree. Its stirring leaves shall sing
Thy thought and deed each fresh recurrent spring."

62.61 1945
Hardy English Walnuts
Graham, Samuel, Ithaca, N. Y.
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Rev. Paul C. Crath standing in front of one of the oldest Carpathian English walnut trees in America. It was grown from a nut which he sent here from the Carpathian Mountains in the spring of 1926. This tree has been taken up and moved three times. Notwithstanding these setbacks, it is a fine thrifty tree; has never shown winter injury, and set over one hundred nuts in the spring of 1937. Under good conditions, it is not uncommon for them to start bearing at six or seven years of age. Picture taken 1937. This tree matured nearly one bushel nuts 1940.

Crath Carpathian English Walnuts

★ The English or, more correctly, the Persian walnut has been highly prized since ancient times. It flourishes in southern Europe and on our own Pacific Coast but practically all the many attempts to grow it in our northern and eastern states have failed. The varieties or strains tried here were native to parts of the Old World where the winters are comparatively mild and they were not able to survive our colder and more changeable climate.

★ Quite recently a much hardier strain has been introduced into America by Rev. Paul C. Crath of Toronto, Canada. For about eight years he was engaged in missionary work in the Carpathian Mountain highlands of the Ukraine district of northern Europe where he often had occasion to notice the hardiness of the English walnuts growing in that severe climate. Investigation indicated that this hardy strain represented the survival of the hardiest of stock brought there probably centuries ago from southern Europe or southern Asia. He often saw the peasants selling many hundred pounds of fine nuts from trees growing near their homes. From one tree belonging to Dr. A. Tarnawski of Kosow over thirteen hundred pounds of nuts were gathered in a single year. The trees were long lived. Near the town of Kostopol in Wolhynia there were several estimated to be over three hundred years old. These trees were all seedlings, walnut grafting being unknown to the people of that country, and the nuts from the different trees differed widely in size and quality. From some of the better trees he sent nuts back to America for test planting. Young trees from these nuts are now grow-

ing and proving hardy in many parts of Canada and in Michigan, New Jersey, New York and Wisconsin. Some of these are already beginning to bear nuts. Our own Crath trees near Ithaca, N. Y., over one hundred in number, from seed planted in the spring of 1933, suffered little or no injury during the record cold winter of 1933-34 when practically all the other English walnut trees in New York were killed together with large numbers of peach, plum, cherry and apple trees.

★ One of the most experienced and best qualified judges of hardy nut trees, the late Prof. James A. Neilson, ex-president of the Northern Nut Growers' Association, at one time horticulturist in the Canadian Horticultural Experiment Station in Vineland, Ont., and later Nut Culture Specialist of Michigan State Agricultural College at East Lansing, Mich., had kept close watch of the behavior of these young Carpathian seedlings from the beginning of their introduction. He was so impressed with their hardiness and the excellence of the nuts that were sent over that he urged a thorough search of the Carpathian highlands to locate the best trees and secure seed nuts from them for planting in America. On Oct. 31, 1933, Prof. Neilson wrote Mr. Crath; "I consider the hardy Carpathian trees of great value and it is my impression that you have done something of great economic value to those in the north who desire to grow the English walnut. This strain is hardier than any other strain that I have ever seen and I really think you deserve great credit for your foresight and enterprise."

★ Rev. Mr. Crath had also long been a close observer of nut trees. He is a graduate of two Universities in Europe and one in America and has

a long agricultural background, his father having been head of the government agricultural college in the Ukraine. From his repeated observations of these hardy walnuts in the Carpathians and the behavior of the young trees in America, he felt so thoroughly convinced that there would be a valuable contribution to our horticulture that in the year 1934, with two trained assistants, he spent all his time for many weeks in making a systematic search for the best trees of the region. They located about seventy trees that were considered worthy of propagation. No tree was considered that showed even slight injury from the severe winter of 1928-29, when a good share of the fruit trees there were killed, and even the cows and pigs had to be taken into the peasants' huts to keep them from freezing to death, the temperature remaining from 40-45° F. below zero for weeks at a time. From these very hardy trees, selection was based on production of good crops of thin shelled, easily cracked nuts with large kernels of good quality. Seed was saved only from trees growing at some distance from other walnut trees to avoid cross-pollination. He had found that seedlings from such self-pollinated trees usually bore nuts that closely resembled those of the parent tree. Each tree from which nuts were saved was given a number. The nuts from it were planted separately and the seedlings grown from these nuts were given the number of the parent tree. A large share of the seed from these best trees was planted in a nursery which he established near Toronto.

★ Experience with these Carpathian walnut seedlings has shown them to grow rather slowly above the ground for the first two or three years during which time they are establishing a large, strong tap root. After that they grow rapidly. With us, they outgrow

NOTES ON THE CARPATHIAN WALNUT

SAMUEL H. GRAHAM, Ithaca, New York

Given at the twenty-ninth annual meeting of the Northern Nut Growers' Association held at Horticultural Hall, Boston, Mass. Sept. 12 and 13, 1938.

The English or, more correctly, the Persian walnuts of the Carpathian Mountains of northern Europe introduced by Rev. Paul C. Crath of Canada have now been planted in an experimental way in America for a number of years. A report on their behavior may be of interest to those who are looking forward to the day when orchards of nut trees in the North will be found worthy to take a place beside established orchards of fruit of other kinds.

Our experience with them goes back six years when Rev. Crath sent us a few quarts of nuts from Poland. The seedlings produced by these nuts were just in time to be severely tested by the record winter of 1933-34. They showed little injury that year nor during the years that have followed although they have never been given winter protection.

The first plantings of Crath Carpathian walnuts in America began in a small way about 1923 and some have been planted nearly every year since. Mr. Crath made his early importations primarily to test this strain of Persian walnut for adaptability to American climatic conditions. The first seed nuts were secured from a few trees growing in the gardens of his Carpathian friends. These trees, although producing fairly good nuts, did not measure up to the careful selections which he began making in 1934, and has continued to make since, of trees bearing superior nuts growing where the conditions were favorable for self pollination.

For the past two years, we have acted as United States distributor for these trees and consequently have been in a position to check on their behavior. Seed from the best trees producing the best crops of the finest nuts located by Rev. Crath in the Carpathian Mountains is planted in his private nursery near Toronto. The little trees are shipped to us in the autumn of their second year packed in sphagnum with no earth on the roots. We heel them in and set them out in nursery rows the following May where they are grown an additional year before being offered for sale. Our nursery is located on a plateau at about 1,500 feet elevation where the climate is not tempered by nearness to any large body of water.

As to the planting of untested seedlings, it has been found that seedlings which are grown from the nuts of Persian walnut trees that are standing by themselves, and consequently are largely self-pollinated, usually bear nuts which are quite similar to those of the parent tree. This does not hold true of many species of fruit trees such as the pear and the apple. The seed walnuts from the Carpathians that Mr. Crath selects for his own planting are not only from trees bearing superior nuts but are, so far as possible, from self-pollinated trees. The planter of these seedlings has a good chance to

get trees which will bear nuts that closely resemble those of the parent and, in any event, nuts of real value. In addition, there is always the possibility of getting something even better than the original.

Our experience has been that they are easy to transplant. In May 1937 we set out 712 and all lived and grew well except seven, while in May 1938 we set 892 and all lived and are growing well except four. We have also transplanted four year old trees with nearly 100% success. This is better than we have been able to do with ornamental evergreens, apples, peaches, cherries, plums, filberts, chestnuts or black walnuts. Of the 676 Crath trees which we have shipped to points all over the United States, practically all have lived so far as we have been able to learn.

We believe in thorough tamping of the earth around the roots, the use of plenty of ground limestone if the soil is not already well supplied with lime, and in using no water until the earth is all filled in and tamped when we water sufficiently to penetrate to the deepest roots. No roots are cut back except the ends of the tap roots but the tops are cut back at least one-half.

The Crath trees stand shipment well. In April 1938 we shipped three trees to California by parcel post. In about ten days a letter came from the California Commissioner of Agriculture stating that they were refusing all trees from the East because of fear of introducing the insect known as the pecan case-bearer. As we are far north of the pecan belt we felt that the danger to California was not very great. However we mailed the return postage. After being away several weeks, not packed with the thought of their being so long in transit, they came home after their six thousand mile trip. The leaves had expanded due to the high temperature to which they had been exposed for such a long period. They were reset and have made such a fine growth that a visitor who recently saw them in our nursery ordered them especially to be shipped to him this fall.

The secretary of the Massachusetts Horticultural Society, in his address to us yesterday, spoke of the large number of inquiries they are receiving from people wanting trees that will be both useful and ornamental. The Crath trees surely have a real place in this connection for they combine the production of valuable nuts with attractive, light-colored bark and rich, dark green foliage that is held until quite late in the fall.

Numerous letters have been received from widely separated sections of America from those who have bought these trees expressing satisfaction over their rapid growth and attractive foliage. In the north at the government experimental farm at Ottawa, Canada, there are two hundred four-year-old Crath trees that have survived their winters so far. Ottawa is about as cold in winter as southern Manitoba. A report Aug. 13, 1938 from thirteen trees shipped the previous year to Dr. J. H. Nauerth of Lakefield, Minn., states that every tree lived

and has made a splendid growth this summer.

In the middle west some Crath trees were sent out several years ago by the Wisconsin Horticultural Society. The secretary of this society, Mr. H. J. Rahmlow, wrote us recently, "Our observation of the Crath Carpathian walnuts is that they are about as hardy as the Bartlett pear and the sour cherry. We have had very little if any complaint about the trees we have shipped out so it looks as if this variety can be easily transplanted even if it is taprooted."

From the far west Mr. H. R. Folsom of Toppenish, Wash., wrote us recently, "For twenty-five years I have been trying to grow Franquette, Mayette and McDougal walnuts only to have them freeze down and eventually die out. They are too tender for this latitude. The seven Crath Carpathian trees that we received last fall have all thrived and made good growth. I am well pleased with them in this territory and have great ambitions for them. They have grown faster than my black walnut seedlings of the same age." Mr. Fred A. Eckholm of Wenatchee Valley, Wash., writes, "The usual procedure of English walnuts here in the Valley is that they do very well until we get a severe winter. Then they are killed back to the ground. Wenatchee is 150 miles inland from Seattle on the banks of the Columbia River between six and seven hundred feet above sea level. About thirty miles north of here there are several commercial walnut orchards and they did very well until the winter of 1936-37. The coldest here was 22 degrees below zero. Nearly all the English walnut trees were killed back and lots were dead to the ground. I am pleased to report that the two small Carpathian trees I set out this spring have done splendidly. One has made a new growth of 24" and the other of 27" which I consider remarkable. Other nut trees that I have planted in the past have shown very little growth the first year."

From the south Dr. N. F. Drake of Fayetteville, Ark., reports that the Crath trees in his experimental nut orchard have made very good growth and the foliage has kept in very good condition. Dr. E. H. Lyle of Wink, Texas, writes under date of Aug. 18, 1938, "My two Crath Carpathian trees are late in budding out in the spring and are doing well. The leaves are healthy with no disease and the color is nice and green. Yesterday the temperature in mid-afternoon in the shade on the east side of our house was 112 degrees F. These walnuts grow much faster than the pecan and they withstand heat and wind better than the young pecans that I have."

Mr. Crath intends to use the money from the sale of his trees to enable him to return to the Carpathians to make a more thorough search for the best walnuts and filberts. Those of us who have been searching for years for better varieties of our native nuts will understand how hard it is to make a thorough canvass of that rugged territory where traveling is so difficult and so slow.

